PCB-Investigator Physics

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Why do I need PCBi - Physics?

PCB-Investigator Physics is the perfect tool to simulate the physical behaviour of your Printed Circuit Boards during development phase.

It enables you to find thermal hotspots, critical trace resistances and voltage drops that are too high, even before prototyping begins!

With the built-in editing functions of PCB-Investigator Physics it’s even possible to optimize the layout and stack-up to achieve the best possible physical behaviour with only a few clicks!

Save valuable time and prototype costs with the simulations of PCBi-Physics!
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To get information about the physical behaviour of your Printed Circuit Board during operation, PCB-Investigator Physics enables you to simulate the following physical properties:

- **The Temperature** raise at each location of the PCB caused by power loss of components or by high currents
- **The Current Density**, e.g. at copper bottlenecks or in drills
- **The Voltage Drop** and **Copper Resistance** between any pins on any layer
Which data is needed?

As input data you can select any CAD format supported by PCB-Investigator.

Supported formats are:
- ODB++
- GenCAD
- IPC2581
- IDF 2.0 / 3.0
- Gerber274x
- ...

We piqued your interest?
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How to run the Simulation?

1) Enter general Project parameters

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2) Enter Stack-Up information (Copper foils, Prepregs)

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3) Enter Current Sources / Sinks for each important net
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How to run the Simulation?

4) Enter Power Dissipation for each Component
How to run the Simulation?

5) Enter environmental Temperatures and Heat Exchange values
How to run the Simulation?

6) Click “Start” to initiate the simulation process
What does the result look like?

The simulation result can be evaluated in the “Result Viewer” by a graphical overlay on the CAD data or with the help of a report.

For documentation issues it is possible to add Notes showing the simulated values at important locations.

The following slides will give a few examples...
What does the result look like?

Example 1: Temperature Overlay with Notes

Temperature on the top signal layer (Filter: Temperature > 60°C)
Which data is needed?

How to run the Simulation?

What does the result look like?

Example 2: Current Density in the net “OUT1”

Current Density in the net “OUT1” over all layers
What does the result look like?

Example 3: Voltage Drop in the net “OUT3”

Voltage Drop in the net “OUT3” (Graphically and as Report)
With this information the Resistance between e.g. U1 and J3 can be calculated (R = U/I)
What does the result look like?

Example 4: 3D Views with Temperature Overlay

3D Views with Temperature Overlay
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What does the result look like?

Example 5: PDF Documentation

PDF Document with Temperature for each layer
Useful Links:

PCBi-Physics
www.PCBi-Physics.com

PCB-Investigator
www.pcb-investigator.com

Native Board Import (3D Interface to CATIA, SiemensNX, SolidWorks, SolidEdge)
www.sts-development.biz

GerberLogix
www.gerberLogix.com

Online Gerber Viewer
www.Gerber-Viewer.com

Software Development, CAD Converter, data connection
www.easyLogix.de